

An Introduction to Clean Air Counts

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www.cleanaircounts.org

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Disclosure of Conflict of Interest Information

I have no existing conflict of information to disclose

Overview

- What is Clean Air Counts?
- What is smog and how is it formed?
- How does air pollution affect human health, and in particular, asthma?
- What can I do?



- Goal: Reduce smog-forming emissions in the region by **5 tons/day**.
This is equivalent to taking 50,000 cars off the road.

- Strategy: Reach sources not traditionally subject to air quality regulations, and advise **voluntary** changes.
- Members: Households, Nonprofits, Businesses, Communities



Who are we?

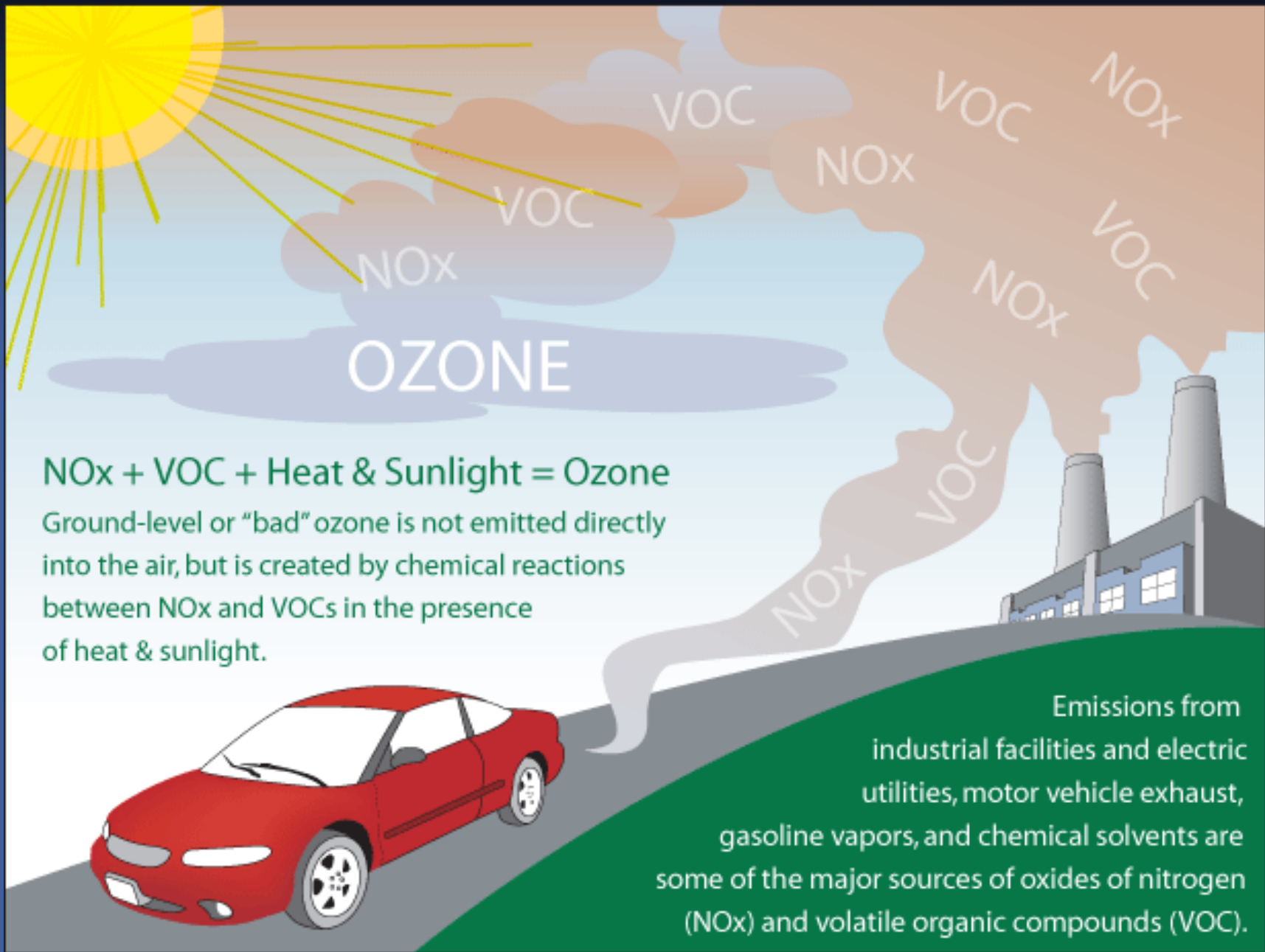


- Collaborative effort of Metropolitan Mayors Caucus, US EPA Region V and Illinois EPA
- Funded through grants from private foundations
- Partner organizations include the Center for Neighborhood Technology, The Delta Institute, LEED Council, and the Openlands Project.

What is smog

- Ground-level ozone
- “Good up high, bad nearby”
- $\text{NO}_x + \text{VOCs} + \text{heat/sunlight} = \text{OZONE}$





NOx + VOC + Heat & Sunlight = Ozone

Ground-level or "bad" ozone is not emitted directly into the air, but is created by chemical reactions between NOx and VOCs in the presence of heat & sunlight.

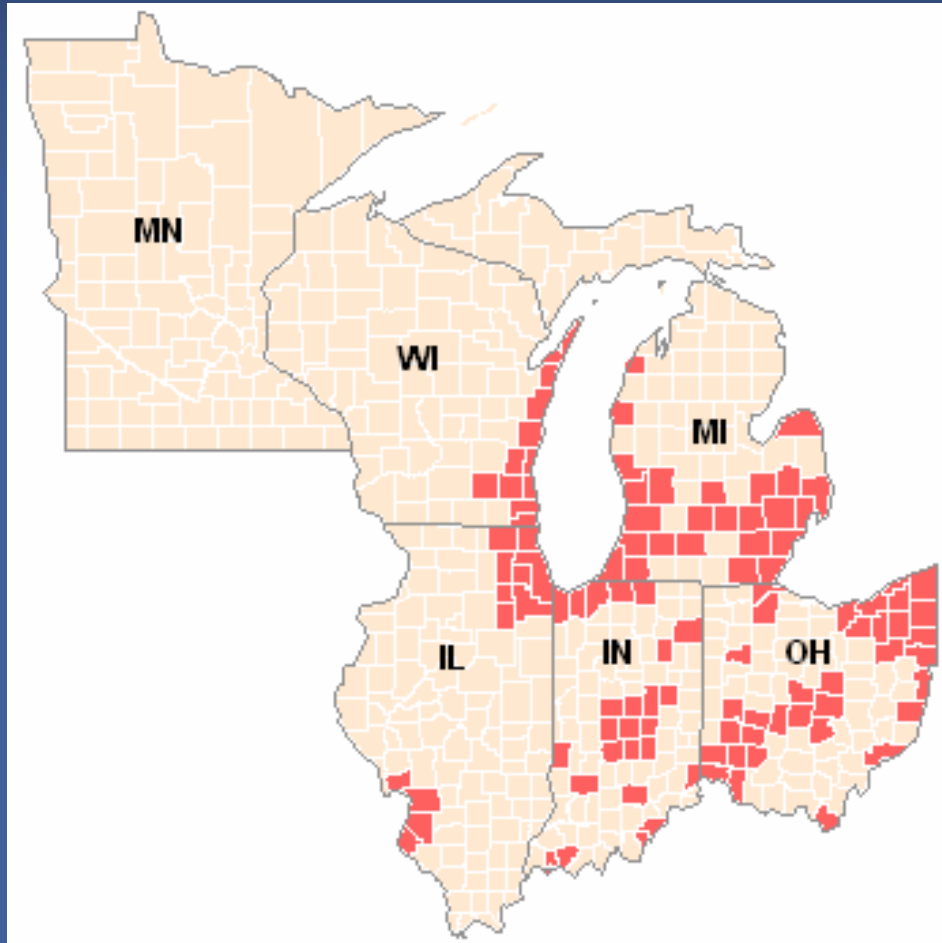
Emissions from industrial facilities and electric utilities, motor vehicle exhaust, gasoline vapors, and chemical solvents are some of the major sources of oxides of nitrogen (NOx) and volatile organic compounds (VOC).

from www.airnow.gov

The smog-forming gases

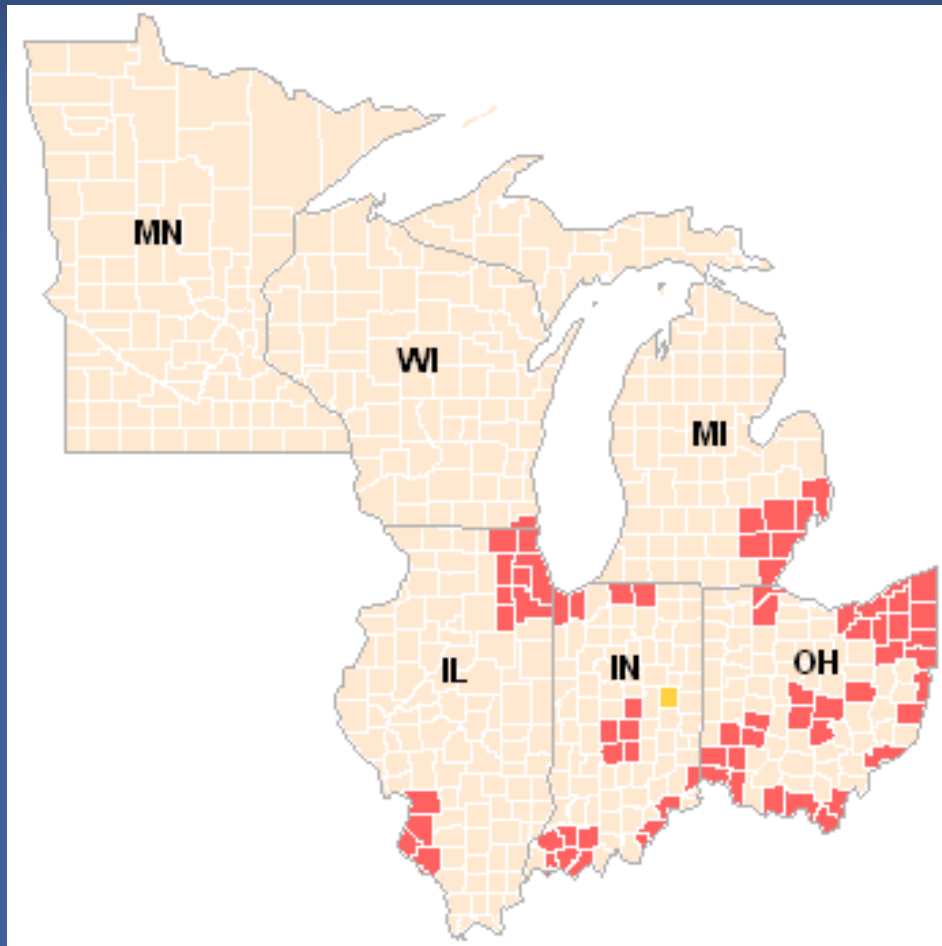
- NO_x
 - Nitrogen oxides, like NO_2
- Sources
 - Cars, lawnmowers
 - Factories
- VOCs
 - Volatile
 - Organic
 - Compounds
- Sources:
 - Cars, lawnmowers
 - Factories
 - Paints, cleaning products, building materials

8-hour Ozone Nonattainment Areas (EPA Region V)



- EPA's National Ambient Air Quality Standard for ozone is a maximum 8 hour average outdoor concentration of 0.08 ppm
- High ozone often accompanied by high concentrations of other pollutants, including nitrogen dioxide, fine particles, and hydrocarbons.

PM_{2.5} Nonattainment Areas (EPA Region V)



- Fine particles, ozone, and regional haze have in common:
 - Precursor pollutants
 - Emission sources
 - Atmospheric processes
 - Spatial scales of transport
 - Geographic areas of concern

Chicago, Illinois

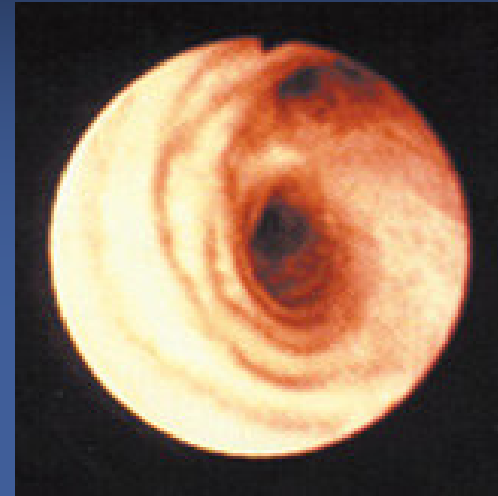
$PM_{2.5} = 8 \text{ ug/m}^3$

$PM_{2.5} = 30 \text{ ug/m}^3$



Health Effects of Ozone

- Respiratory
 - Reduces lung function, constricts airways
 - Inflames and damages cells in lung lining
 - Aggravates asthma and other chronic lung diseases
 - Particulate Matter also penetrates lungs and aggravates these conditions



Health Effects of Ozone

- Cardiovascular
 - Increases risk of cardiac arrest and stroke.
 - NOx particulates especially aggravating to heart conditions
- Sensory
 - VOCs irritate eyes and nose; can cause headaches, dizziness

Who is most at risk?

- Children
- Senior citizens
- People with pre-existing respiratory disease (Asthma)
- People who work or exercise outdoors
- “Responders”

Asthma in Chicago

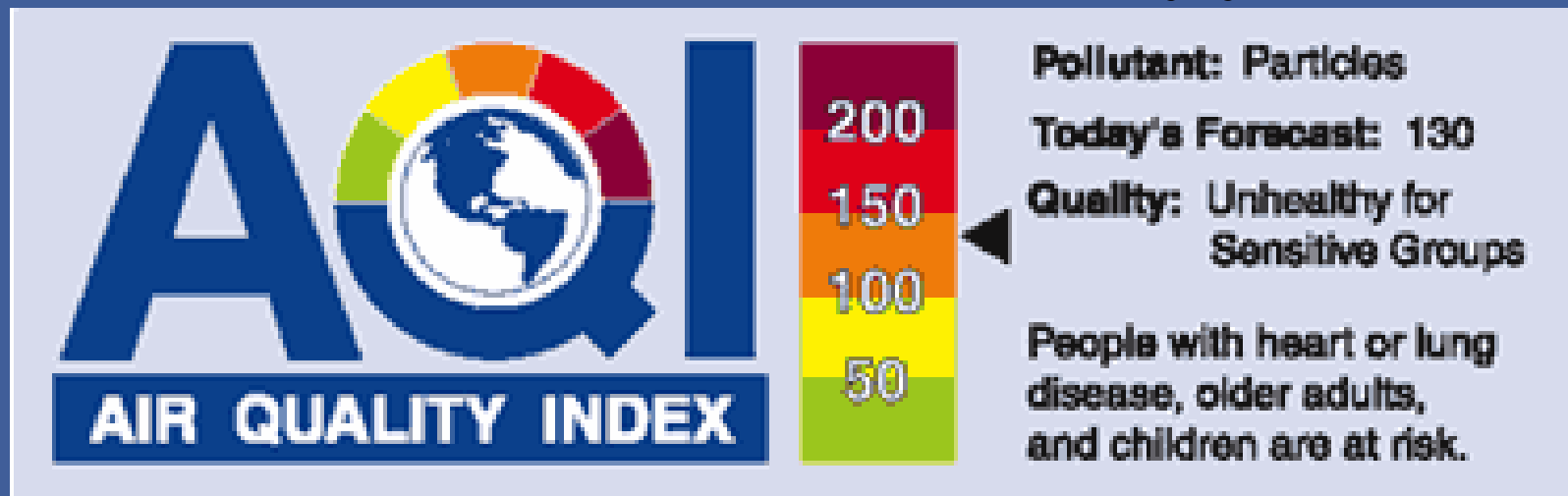
- In Cook County, 317,906 adults and 121,610 children under 12 have asthma.
- Chicago's asthma hospitalization rate is more than double the national per capita average

Asthma and Ozone

- Ozone increases sensitivity to allergens, a common asthma trigger.
- Ozone can further constrict airways
- Children with asthma are especially vulnerable:
 - Children with asthma are 40% more likely to suffer attacks on high-ozone days than on average-pollution days.

Avoid exposure

Your chances of being affected by ozone increase the longer you are active outdoors and the more strenuous the activity you



- www.AIRNow.gov
- Weather reports, Newspapers

Air Quality Index

Air Quality Index (AQI) Values	Levels of Health Concern	Colors
When the AQI is in this range:	...air quality conditions are:	...as symbolized by this color:
0 to 50	Good	Green
51 to 100	Moderate	Yellow
101 to 150	Unhealthy for Sensitive Groups	Orange
151 to 200	Unhealthy	Red
201 to 300	Very Unhealthy	Purple
301 to 500	Hazardous	Maroon

Source: Power Plants

Solution: Energy Efficiency

- Lighting
 - Compact Fluorescent Lightbulb:
 - uses 1/3 energy of standard bulbs
 - lasts up to 10x longer
 - Save \$50 over lifetime of bulb
- Energy Efficient Appliances
 - Energy Star
- Maintenance



Source: Chemical Solvents

Solution: Low-VOC Products

- Paints
- Cleaning Products
- Building Materials
 - Particleboard
 - Carpet, carpet adhesives



www.greenseal.org

Indoor Air Quality and Asthma

- DO keep your home clean to avoid mold, cockroaches
- DO NOT smoke indoors
- REDUCE use of wood-burning stoves, fireplaces, and candles
- DO NOT use ozone-creating air purifiers
- DO clean AC filters regularly

Source: Cars

Solution: Alternative Transportation

- Walking, Biking
 - Direct Health Benefits
- Public Transit
- Carpooling, Carsharing
- If you do have a car
 - Maintenance
 - Avoid filling gas tank at midday



Source: Lawncare

Solution: Native Landscaping

- Lawnmowers
 - Push mowers, efficient models
 - Avoid filling gas tank at midday
- Native landscaping reduces need for lawnmowing, pesticides
- Greater variety of plants benefits air and water quality
- Houseplants can improve indoor air quality

Top 10 Air-Cleaning Houseplants

- According to NASA, these 10 houseplants are the most effective in purifying indoor air:
 - Bamboo Palm
 - Chinese Evergreen
 - English Ivy
 - Gerber Daisy
 - Peace Lily
 - Pop Mum
 - Warneckii
 - Janet Craig
 - Marginata
 - Mother-in-Law's Tongue

Summary of Actions

- Use energy efficient lightbulbs and appliances.
- Use low-VOC cleaning products, paints, and building materials
- Walk, bike, or use public transit when possible
- Use native plants in your lawn and garden
- Maintain your home appliances and car to keep them running efficiently

For Further Information

- Contact Lisa Bennett at (773) 269-4070 or lisab@cnt.org
- Get your household and/or workplace involved

